UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,657	01/13/2006	Vladimir Pekar	DE030250	9681

24737   7590   04/01/2009
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER
SHIKHMAN, MAX

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
04/01/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<table>
<tr><td rowspan="2">Office Action Summary</td><td>Application No.</td><td>Applicant(s)</td></tr>
<tr><td>10/564,657</td><td>PEKAR ET AL.</td></tr>
<tr><td></td><td>Examiner</td><td>Art Unit</td></tr>
<tr><td></td><td>MAX SHIKHMAN</td><td>2624</td></tr>
</table>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>13 January 2006</u>.
2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-10</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) <u>1-10</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on <u>13 January 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☒ All b)☐ Some * c)☐ None of:
       1.☒ Certified copies of the priority documents have been received.
       2.☐ Certified copies of the priority documents have been received in Application No. _____.
       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>03/09/2007</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-10 rejected under 35 U.S.C. 102(b) as being anticipated by

Cootes "The Use of Active Shape Models For Locating Structures in

Medical Images", Image and Vision Computing Vol.12 No.6 July 1994 pp. 355-

366.

() **Regarding Claim 1**:

(NOTE: deformable surface model=Fig3, "heart ventricle model". fig6. "heart

chamber boundary model"

object-specific data= Figs 1, 2. ventricle)

1. Method of segmenting an object of interest from a multi-dimensional dataset,

wherein a deformable surface model is to be adapted to a surface of the object, method

comprising the steps of:

acquiring object-specific data; (Figs 1, 2. ventricle)

adapting (Fig6, iterations) the deformable surface model to the surface of the

object by using the object-specific data. (Fig6 boundary model superimposed. Figs

8-10)

() **Regarding Claim 2**:

(NOTE: object-specific data= Figs 1, 2. ventricle

group=shape=Fig2 ventricle shapes. search=sections 5,6.1 search.

point distribution model=Section 5, Sec6.4 PDM, section 7.4)

2. The method of claim 1, wherein

the object-specific data is selected from the group consisting of shape properties

in the form of an object model, (Fig6a Initial state)

a point distribution model, (Sec6.4 PDM)

an object-specific feature search function,

(p361 sec6.1 "search the strongest edge along the profile".)

an object-specific parameter setting and object-specific material properties.

{Fig6. sec6.1 "model is able to infer the position of the parts of the boundary

where the data is poor (for example, near the top of the ventricle) by using the

knowledge of the expected shape combined with information from the areas of

the image where there is good evidence for the ventricle wall."}

() **Regarding Claim 3:**

3. The method of claim 2, wherein the object-specific feature search function is

adapted to a predefined range of values selected from the group consisting of a gradient,

(Section5.1 "derivative profile g", "gradient of the potential") a direction of a gradient

(fig5, Sec5.1 "direction of the point of best fit,") and an intensity range. (Sec5

"description of the grey levels about each model point". Sec5.1 "grey model".

Sec6.1 "grey-levels around each point are modelled as step edges in the correct

direction." Sec6.2 "grey-levels profile")

() **Regarding Claim 4:**

4. The method of claim 2, wherein the object-specific parameter setting (section6.1 "The initial placement was obtained by choosing a set of pose parameters and setting all the shape parameters to zero") is adapted to control an influence of image features and shape constraints. (fig3 b1,b2,b3,b4. Equation23. section6.1 "shape model used")

() **Regarding Claim 5:**

5. The method of claim 2, wherein the object-specific material properties relate to tissue properties of an organ (fig6 heart, Fig7 abdomen) which are assigned to internal nodes of a volumetric mesh (fig3) of the deformable surface model. (Figs 6-10. section6.1 "prior knowledge of the shape given by the model")

() **Regarding Claim 6:**

6. The method of claim 1, wherein the step of acquiring object-specific data comprises the steps of:

displaying a graphical user interface(sec6.1 Sun sparc workstation) on a display prompting a user to input object related information; (sec6.1 "choosing a set of pose parameters and setting all the shape parameters to zero")

receiving a corresponding data input from an input device; (sec6.1 Echocardiograms)

storing the data input as object-specific (section6.1 "prior knowledge of the shape given by the model") data in a memory. (sec6.1 Sun sparc workstation)

() **Regarding Claim 7:**

7. The method of claim 1, wherein the step of acquiring object-specific data comprises the steps of: reading the object-specific (section6.1 "prior knowledge of the shape given by the model") data from a memory. (sec6.1 Sun sparc workstation)

() Regarding Claim 8:

8. The method of claim 1, wherein the method is an organ segmentation method for segmenting anatomical structures in medical images. (sec6.4 "segment brain ventricles from 3-D volume images.")

() Regarding Claim 9:

(NOTE: deformable surface model=Fig3, "heart ventricle model", fig6. "heart chamber boundary model". object-specific data= Figs 1, 2. ventricle)

9. Image processing device, comprising:

a memory for storing (sec6.1 Sun sparc workstation) acquired object-specific data; and

an image processor (sec6.1 Sun sparc workstation) for segmenting an object of interest from an image, (sec6.4 "segment brain ventricles from 3-D volume images.")

wherein a deformable surface model (fig6. "heart chamber boundary model") is adapted to a surface of the object (fig6) by using the object-specific data. (sec6.1 "choosing a set of pose parameters and setting all the shape parameters to zero corresponding to the mean model shape")

() Regarding Claim 10:

(NOTE: deformable surface model=Fig3, "heart ventricle model", fig6. "heart chamber boundary model". object-specific data= Figs 1, 2. ventricle)

10. Computer program for segmenting an object of interest from a multi-dimensional dataset, wherein a deformable surface model is to be adapted to a surface of the object, wherein the computer program (sec6.1 Sun sparc workstation) causes a processor (sec6.1 Sun sparc workstation) to perform the following steps when the computer is executed on the processor:

acquiring object-specific data; (sec6.1 "choosing a set of pose parameters and setting all the shape parameters to zero corresponding to the mean model shape")

adapting the deformable surface model to the surface of the object by using the object-specific data. (fig6 "heart chamber boundary model". Figs 7-10)

Conclusion

3.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAX SHIKHMAN whose telephone number is (571)270-1669. The examiner can normally be reached on Monday-Friday 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public

PAIR. Status information for unpublished applications is available through

Private PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

/Max Shikhman/
Examiner, Art Unit 2624
3.29.2009

/Vikkram Bali/
Supervisory Patent Examiner, Art Unit 2624